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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,704	08/19/2003	Bruce A. Cranner	781-02	5125

23659 7590 12/22/2006

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EXAMINER	
JOSEPH, TONYA S	
ART UNIT	**PAPER NUMBER**
3628	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/22/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/643,704	CRANNER, BRUCE A.	
	Examiner	Art Unit	
	Tonya Joseph	3628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-6 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

3. Claims 1-6 are directed to a mathematical formula which is a mere abstract idea, and therefore falls within one of the judicial exceptions to patentability. In order for an abstract idea to be patent eligible, the limitations of the claim must set forth a practical application. A practical application results if the claimed invention transforms an article or physical object to a different state or thing; or if the claimed invention produces a useful, concrete, and tangible result. As the claims are currently presented, they include nothing more than a mathematical formula, with no accompanying practical application. The lacking of such a practical application, have rendered the claims nonstatutory. Furthermore, the Examiner notes, one may not patent a process that comprises every "substantial practical application" of an abstract idea, because such a patent "in practical effect would be a patent on the [abstract idea] itself." Benson, 409 U.S. at 71-72, 175 USPQ at 676; cf. Diehr, 450 U.S. at 187, 209 USPQ.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rycraft (Reference U of the attached PTO-892) in view of Official Notice.

7. As per Claim 1, Rycraft teaches ***selecting a baseline price for a billing period*** (see pg. 1 para. 2 line 1, Examiner is interpreting the standing charge as the baseline price); selecting a variable price per event or time period (see pg. 11 para. 3 line 13, Examiner is interpreting ***(C-X)P*** to be a variable price per event, the event being a kilowatt hour of consumption; ***the variable price being negative*** (see pg. 11 para. 3 line 13, Examiner is interpreting ***–(C-X)P*** as being a negative variable price; ***selecting a number of events or a number of time periods*** (see pg. 11 para. 3 line 13, Examiner is interpreting a kilowatt hour of as an event); Rycraft does not explicitly teach ***calculating a total price per billing period***. Official Notice is taken that calculating a total price per billing period is old and well known in the art of consumer economics. It would have been prima facie obvious to one of ordinary skill in the art at the time of invention to modify the method of Rycraft to include billing in order to charge a customer incrementally for service used.

8. As per Claim 2, Rycraft in view of Official Notice teaches the method of claim 1 as described above. Rycraft further teaches wherein the total price is the sum of the baseline price and the product produced by multiplying the variable price and the number of events or time periods (see pg. 11 para. 4 lines 1-4, Examiner is interpreting the account to be the total price). Examiner is further interpreting the event as event being a kilowatt-hour of consumption.

9. As per Claim 3, Rycraft in view of Official Notice teaches the method of claim 2 as described above. Rycraft teaches that the size of **X** can vary dependant upon consumer consumption. Rycraft does not ***explicitly teach wherein the absolute value of product of the variable price and the number of events or time periods is less than or equal to the baseline price.*** Official Notice is taken that, depending on the value of **X**, the absolute value can be less than or equal to the baseline price. It would have been prima facie obvious to one of ordinary skill in the art at the time of invention to modify the method of Rycraft to include the absolute value of product of the variable price and the number of events or time periods is less than or equal to the baseline price in order to take into account the varying usage of a service a consumer.

10. As per Claim 4, Rycraft in view of Official Notice teaches the method of claim 3 as described above. Rycraft teaches that the size of **X** can vary dependant upon consumer consumption. Rycraft does not ***explicitly teach wherein the absolute value of product of the variable price and the number of events or time periods is equal to the baseline price.*** Official Notice is taken that, depending on the value of **X**, the absolute value can be less than or equal to the baseline price. It would have been prima

facie obvious to one of ordinary skill in the art at the time of invention to modify the method of Rycraft to include the absolute value of product of the variable price and the number of events or time periods is equal to the baseline price in order to take into account the varying usage of a service a consumer.

11. As per Claim 5, Rycraft in view of Official Notice teaches the method of claim 2 as described above. Rycraft teaches that the size of **X** can vary dependant upon consumer consumption. Rycraft does not ***explicitly teach wherein the absolute value of product of the variable price and the number of events or time periods is less than the baseline price.*** Official Notice is taken that, depending on the value of **X**, the absolute value can be less than or equal to the baseline price. It would have been prima facie obvious to one of ordinary skill in the art at the time of invention to modify the method of Rycraft to include the absolute value of product of the variable price and the number of events or time periods is less than the baseline price in order to take into account the varying usage of a service a consumer.

12. As per Claim 6, Rycraft in view of Official Notice teaches the method of claim 2 as described above. Rycraft teaches that the size of **X** can vary dependant upon consumer consumption. Rycraft does not ***explicitly teach wherein the absolute value of product of the variable price and the number of events or time periods is greater than the baseline price.*** Official Notice is taken that, depending on the value of **X**, the absolute value can be less than or equal to the baseline price. It would have been prima facie obvious to one of ordinary skill in the art at the time of invention to modify the method of Rycraft to include the absolute value of product of the variable price and

the number of events or time periods is greater than the baseline price in order to take into account the varying usage of a service a consumer.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Energy Efficiency (Reference V of the attached PTO-892) teaches a declining rate structure for utility systems.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tonya Joseph whose telephone number is 571-270-1361. The examiner can normally be reached on Mon-Fri 7:30am-5:00pm First Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Nolan can be reached on 571 272 0847. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tonya Joseph
Examiner
Art Unit 3628

MATTHEW S. GART
PRIMARY EXAMINER
TECHNOLOGY CENTER 3600

Notice of References Cited	Application/Control No. 10/643,704	Applicant(s)/Patent Under Reexamination CRANNER, BRUCE A.	
	Examiner Tonya Joseph	Art Unit 3628	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-			
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	Rycraft, M (1986, March) "Use More-Pay Less" The Mathematical Gazette
	V	Natural Resources Canada (1994, March) "Technical Information" Energy Efficiency
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Reference 4

Use more—pay less

M. RYCRAFT

Introduction

I have considered elsewhere the modelling of the pricing policies of Electricity Boards, Gas Boards and British Telecom [1]. In this article the combined effect of the standing charge rebate and estimate accounts are considered and two results contrary to popular belief are shown.

Some preliminaries

Domestic Electricity Board charges are of the form $xp + s$ where s is the standing charge, p the price per unit and x the number of units (kilowatt hours) of electricity consumed. Gas charges are similar except that volume is measured, then converted into therms (units of energy) and the price per therm quoted. The above formula can of course be used with x measured in cubic feet and p the price per cubic foot or x in therms and p the price per therm.

As a result of the cold weather and recent increases in charges, particularly in the standing charge in early 1982, there was pressure in Parliament to mitigate the effect of charges. In particular there was pressure to reduce the standing charge for small users. As a result, provision was made for a rebate on the standing charge if the "units" part of the bill is less than the standing charge. In symbols, the case when $xp < s$ or $x < s/p$. The quantity s/p can conveniently be called the *critical quantity* and denoted by the letter c: this is the quantity such that half of the account comes from the standing charge before rebates are considered.

The rebate, where applicable, is the amount by which the total fixed charges exceed the unit charges. So if $x < c$ then the rebate is $(c - x)p$ and the account is

$$xp + s - (c - x)p = 2xp.$$

Meters are not always read but estimates are sometimes made (e.g. because the householder is not at home and in some areas alternate bills are based on estimated readings). Recent gas bills show that if the reading is estimated for one quarter and then read for the next, the second figure minus the first is used as the basis for calculating the account, provided this number of units is positive. If, however, the second quarter's end reading is less than the estimate my Electricity Board will prepare a total account for six months, a rebate only being given if the total "units" cost for six months is less than two quarters' standing charges. The account for the second quarter is obtained by subtracting what has been paid at the end of the first quarter from this total. These procedures produce some unexpected results and some discontinuities.

Total cost for six months

In this section we consider how the *total* cost for a six month period varies with the estimate made after one quarter and we eventually plot that total cost against the estimate. We need to consider three cases, letting A be total consumption for six months and x the estimate after three months.

Case (a)—total consumption more than twice critical quantity

If the estimate is such that neither account is for less than the critical quantity then there is no rebate and the total cost is $Ap + 2s$. However, if the estimate is for less than c (an unlikely situation) there will be a rebate for the first quarter:

If the estimate is x $\quad (0 \leqslant x \leqslant c)$
First bill $= 2xp$
Second bill $= (A - x)p + s$
Total $= 2xp + Ap - xp + s = Ap + s + xp$

So throughout this range $0 \leqslant x \leqslant c$ the total cost varies linearly from $Ap + s$ to $Ap + 2s$.

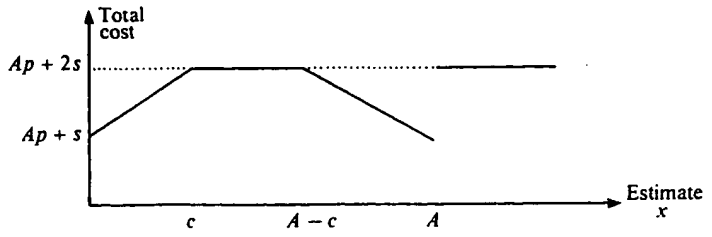
A similar situation arises when $A - c \leqslant x < A$. For then

First bill $= xp + s$
Second bill $= 2(A - x)p$
Total $= xp + s + 2(A - x)p = 2Ap + s - xp$

So throughout this range the total cost decreases linearly from $Ap + 2s$ to $Ap + s$.

However, if $x \geqslant A$ then the situation changes. In this case, the reading at the end of the second quarter is less than the estimate. The total bill is now calculated as $Ap + 2s$: at $x = A$, the cost function has a jump discontinuity.

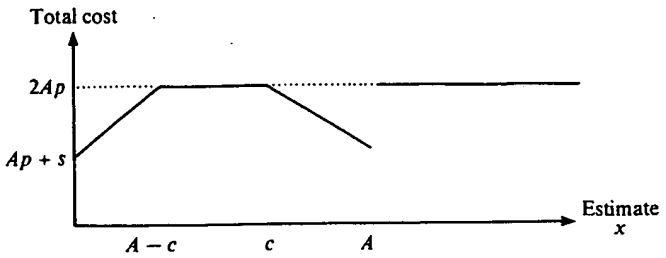
A graph of total payable against estimate x for total consumption A is as shown:



By giving an estimate x such that $A - c < x < A$ the board obtains less total revenue: sometimes it pays to get a high estimate!

Case(b)—total consumption between critical quantity and twice this

In a similar way we obtain the following graph:



Case (c)—total consumption less than critical quantity

In this case the total cost is always $2Ap$, and the estimate makes no difference.

More use—less cost

So far we have considered the problem where the total used for six months is fixed. We now consider the related problem of 'given an estimated account submitted and paid, how does the next quarter's bill vary with the quantity used?' We will assume an estimate B for the first quarter and construct the graph of how the second bill varies with the total consumption y.

For example, if $B \geqslant 2c$, then the second bill (in terms of the total 6-month consumption y) is given by

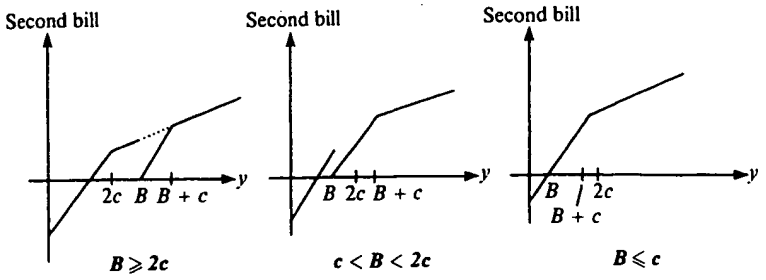
$$\left.\begin{array}{rl} (y-B)p+s & \text{if } y > B+c \\ 2(y-B)p & \text{if } B+c \geqslant y \geqslant B \end{array}\right\} \text{i.e. the second bill is based on a consumption of } y-B$$

$$\left.\begin{array}{rl} (yp+2s)-(Bp+s) & \text{if } B > y \geqslant 2c \\ (2yp)-(Bp+s) & \text{if } 2c > y. \end{array}\right\} \text{i.e. because } y < B \text{ a bill is calculated for the 6-month consumption and the amount already paid is deducted.}$$

No increase?

"However, it was still far below the U.S. government's safety level . . . If everyone in the U.S. had drunk water with this level of plutonium for a lifetime, the number of deaths from all causes in 1982 would have increased by less than one." From the *Mail on Sunday* of 28 July 1985, sent in by Keith Lloyd.

These expressions simplify and the graph is easy to draw. Similar calculations can be carried out for the cases $c < B < 2c$ and $B \leqslant c$ to yield



Note that in the first case ($B \geqslant 2c$) a householder whose meter reads between $\frac{1}{2}(B + c)$ and B for the six months can actually *save* money by using fuel to bring the meter up to a reading of B. A similar anomaly occurs in the second case ($c < B < 2c$) but not in the third ($B \leq c$) where the discontinuity has disappeared.

Conclusion

A mathematical analysis of the situation has revealed that there are cases where a high estimate reduces the total payable to the Board and that in some cases one can save money by wasting fuel. Cockcroft mentioned the calculation of gas and electricity bills and this article has shown that they give a classroom interest beyond simple arithmetic.

Reference

1. M. Rycraft, Electricity Board pricing policy, *Teaching Maths & its Appl.* 4 (1985), 13–16.

M. RYCRAFT

Physics, Maths and Computing Department, Manchester Polytechnic

The mathematics of borrowing money

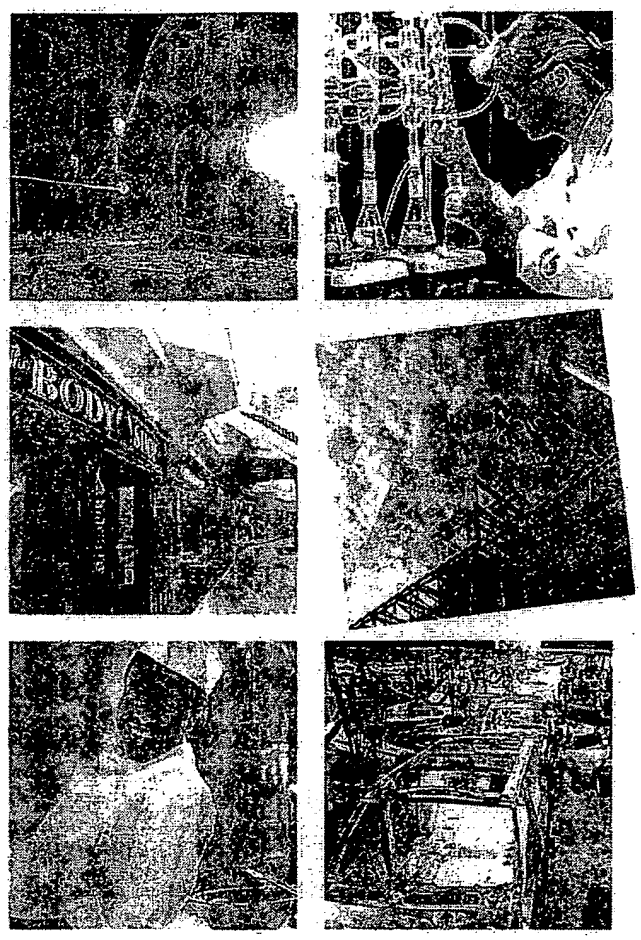
FERGUS J. GAINES

Many people have had the experience of borrowing a sum of money which is to be repaid with interest by making equal monthly payments over a year or a number of years. Two problems suggest themselves:

1. If the annual rate of interest is known what is the value of each monthly payment?
2. If the monthly payment is known, what is the annual rate of interest?

Reference V

ENERGY EFFICIENCY



TECHNICAL INFORMATION

■

March — 1994

Part of the Efficiency and Alternative Energy Program

Un élément du Programme de l'efficacité énergétique et des énergies de remplacement

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Consumption charge

The consumer is also charged for the total amount of energy consumed. While power is the rate at which work is done, **energy consumption*** is a measure of the amount of work done. Using the car analogy, just as power is like the speed of a car, energy consumption can be compared to the distance travelled by the car. The consumption charge, or energy charge, is typically applied in cents per kilowatt-hour.

*Power is the rate at which work is done and is measured in kilowatts (kW).

*Energy consumption is a measure of the amount of work done and is measured in kilowatt-hours (kWh). The amount of energy consumed is the amount of the power times the amount of time for which the power is used.

1 kilowatt (kW) = 1000 Watts (W)

1 Watt = 1 Joule/second (J/s)

1 kilowatt-hour (kWh) = 1 kilowatt [illegible]

1 kilowatt x 1 hour = 3.6 Megajoules (MJ)

Power factor adjustment

In addition to demand and consumption charges, commercial customers may be charged a very high penalty if their **power factor*** drops below a set amount, typically 90 per cent. The lower the power factor, the more power the utility has to generate, though no more demand may be registered on the demand meter. Electricity demand meters measure only the resistive power, the part that actually performs work; whereas the utility must deliver sufficient power to account for the total apparent power used by a customer. A special meter is required to measure the total apparent power, which is measured in kilovolt-amps.

The power factor penalty is typically applied by adjusting the demand charge to be based on a percentage of the peak kilovolt-amp reading, instead of on the peak demand. For example, if a utility charges a penalty for a power factor below 90 per cent, the power factor adjustment would be made by calculating the demand charge using 90 per cent of the peak kilovolt-amp reading, instead of using the peak demand reading.

*Power factor is the amount of the portion of power that actually performs work, known as resistive power and measured in kilowatts (kW), divided by the total apparent power, measured in kilovolt-amps (kVA). The power factor may be expressed as a percentage or as a number between 0 and 1.

$$\text{Power Factor} = \frac{\text{Resistive Power (kW)}}{\text{Total Apparent Power (kVA)}}$$

Other charges

In addition to the consumption, demand and power factor charges, a customer may be billed for other items such as equipment rentals, transformer charges or metering charges. As well, there is usually some minimum fee to cover administration costs and the costs of providing a distribution system year round, even though the customer may only use electricity for part of the year. Electricity is also subject to the Goods and Services Tax.

Rate structures

Sometimes the rate structure may be as simple as having a single rate for demand and one for consumption. This is known as a flat-rate structure. A more typical rate structure though is the declining block form in which the electricity demand and consumption in a billing period are broken down into blocks, with the lower blocks being charged at higher rates. Examples of a declining rate structure and an electricity bill are given below.

How to Reduce Your Electricity Bill

After understanding the different electricity charges, one realizes that there are several means of reducing one's electricity bill, aside from reducing consumption, without reducing the services provided.

1. Avoid power factor penalties

Avoid power factor penalties whenever possible. Whenever power is supplied to an inductive load (such as an electric motor, a transformer, or a fluorescent light) power factor is reduced. Capacitors may be installed to increase the power factor.

2. Reduce demand charges

Depending on the type of electric equipment in the building, demand charges may be reduced by load shifting. Load shifting is a method of reducing peak demands by moving some of the electricity demand ahead or delaying it until after the normal peak.

3. Apply for a different rate structures

Some utilities offer a variety of different rate structures for commercial customers. "Time-of-Use" rate may be suitable for facilities where much of the electricity is consumed during off-peak hours, since off-peak electricity is charged at a lower rate. Some utilities also offer an interruptible service in which customers receive electricity at lower rates in return for allowing the utility to temporarily reduce or stop electricity delivery to their facility when the utility as a whole is experiencing peak power demands.

Example of a declining block structure for electricity rates

Demand charge:	first 50 kW – no charge next 4,950 kW — $5.15 /kW remaining kW – $13.50 /kW
Consumption charge:	first 250 kWh — $0.085/kWh next 15,250 kWh — $0.08/kWh next 1,984,500 kWh — $0.06/kWh remaining kWh — $0.045/kWh
Minimum monthly charge:	if under 50 kW -- $5.00 if over 50 kW -- $0.60/kW (based on the maximum demand during the previous 11 months)

Example of an electricity bill with declining block rates

During a billing period, 60,000 kWh of electricity was consumed with a peak demand of 100 kW. The declining rate structure given above applies.

	Totals
Demand charges:	
first 50 kW are free = $ 0.00	
remaining 50 kW @ $5.15/kW = $257.50	$ 257.50
Consumption charges:	
first 250 kWh @ $0.085/kWh = $21.25	
next 15,250 kWh @ $0.08/kWh = $1,220.00	
remaining 44,500 kWh @ $0.060/kWh = $2,670.00	$3,911.25
SUBTOTAL	**$4,168.75**
Plus 7% GST	$ 291.81
TOTAL BILL	**$4,460.56**

Note: Even if no electricity had been consumed this billing period, a minimum charge of $60 ($.60 / KW x 100 KW) plus GST would still have been charged, assuming that the maximum demand in the previous 11 months had been 100 KW.

Gas Utility Rates

Gas rates are structured like the declining block rates often used for electricity. A customer's gas consumption is broken down into blocks, with the lower blocks being charged higher rates per unit of gas. Typically gas charges are applied in dollars per cubic meter ($/m^3$) or dollars per gigajoule (GJ), where a gigajoule is the measure of the energy content of the fuel delivered. Examples of gas rates and a gas bill are shown below. The key to reducing your gas bill is to reduce your gas consumption.

1 gigajoule (GJ) = 10^9 joules

Example of gas rates

Consumption charge: first 6.0 GJ — $5.571 /GJ
next 99.5 GJ — $4.891/GJ
remaining GJ — $4.273/GJ

Minimum monthly charges: $15.00 monthly minimum plus GST

Example of a gas bill

During a billing period, a customer consumed 400 GJ of gas. The gas rates given above apply.

	Totals
Consumption charges:	
first 6.0 GJ @ $5.571/GJ = $33.43	
next 99.5 GJ @ $4.891/GJ = $486.65	
remaining 294.5 GJ @ $4.273/GJ = $1258.40	
SUBTOTAL	**$1,778.48**
Plus 7% GST	$ 124.49
TOTAL BILL	**$1,902.97**

Steam, Oil, Diesel, Water and Other Utility Rates

The utility rates for other fuels and resources, such as steam, oil, diesel or water, are typically charged on the basis of bulk billing units, as shown in Table 1. Not all of these are metered. While steam or water is metered regularly for billing purposes, oil and diesel tanks are usually filled seasonally or at irregular intervals. When a fuel or resource is not regularly metered by the utility, manual maintenance of log books may be required for energy tracking purposes.